Portable extinguishers for ships and aircraft
A Fire Prevention Officer
The Guardian (1959-2003); Sep 1, 1960;
ProQuest Historical Newspapers: The Guardian (1821-2003) and The Observer (1791-2003)
pg. 10

MARINE FIRE RISKS

Portable extinguishers for ships and aircraft

By a Fire Prevention Officer

The requirements for portable fire-fighting equipment on board ship are laid down in the Merchant Shipping (Fire Appliances) Rules, 1952, and these are based on the decisions reached at the International Convention on Safety of Life at Sea which was held in 1948.

The rules deal with 12 classes of ship from large passenger liners on international voyages to pleasure yachts, tugs, tenders, and fishing boats, and the fire-fighting equipment prescribed includes pumps, hydrants, hoses, nozzles, buckets, and extinguishers. The rules also lay down standards for fire-smothering gas and steam installations for cargo spaces, and foam installations for machinery spaces. They also include provision for the stopping of fans and the closing of openings to prevent fire from spreading, and for such additional fire-fignting equipment as safety lamps, firemen's axes, and breathing apparatus or smoke helmets, the whole being referred to collectively as a "fireman's outfit."

Fire risks on board ship are divided into three broad categories. These are:

1. Passenger and crew spaces, known generally as "accommodation spaces."
2. Cargo spaces and store rooms.
3. Machinery spaces.

For the first two groups, water-type extinguishers and buckets are provided. For the last group "froth" (or foam, as it is more commonly known) extinguishers are prescribed, although the rules also permit the provision of extinguishers discharging "another substance suitable for quenching oil fires." This allows the use of carbon dioxide, or the more modern dry powder extinguishers.

All extinguishers must have the approval of the Ministry of Transport, which, after test, issues a certificate specifying the size and type of extinguisher, and where it is acceptable for use on board ship. The acceptance of the extinguisher is subject to periodic tests to show that it is satisfactory in service.

Water-type's advantages

The Royal Navy has for many years standardised on a water-type extinguisher for accommodation and storage spaces, known as the water (gas pressure) type, in which the expellent gas is provided in the form of a sealed charge of carbon dioxide in an inner container. The advantages of this type of extinguisher are speedy and easy recharging without the necessity of carrying spare charges in the form of bulky chemicals.

For fire-fighting in machinery spaces, in which oil is the principal risk, foam extinguishers are most commonly provided. These may be of the chemical-reaction type, or the more modern air-foam type, in which the foam is produced by the aeration of a foam compound in solution with water instead of by the chemical reaction of aluminium sulphate and bicarbonate of soda (plus a stabiliser to strengthen the bubbles of which the foam consists) which has been the basis of chemical foam extinguishers for many years. As an alternative to foam, carbon dioxide extinguishers may be provided, and a 10lb. carbon dioxide extinguisher is rated by the Ministry as equal to the standard two-gallon size foam extinguisher.

The disadvantages of carbon dioxide are that the gas is comparatively inefficient as a fire extinguishing agent, requiring approximately a 20 per cent concentration in air to achieve extinction: it has no cooling effect; and it disperses quickly. Where a fire involving oil has been burning long enough to raise the temperature of near-by metal parts of machinery or piping to red heat there is a real danger that the inflammable vapours still being given off by the hot oil will be re-ignited, and the fire set going again as fiercely as it was before the extinguisher was used. Foam, on the other hand, puts a blanket on the surface of the oil which considerably reduces the amount of inflammable vapour being given off.

The modern gas-expelled dry powder extinguisher, containing about 98 per cent of finely ground bicarbonate of soda with about 2 per cent of a water-repellent agent such as aluminium or magnesium stearate, is accepted by the Ministry for use on board ship for the protection of machinery spaces with the limitation that only 50 per cent of the extinguishers may be of this type. The remaining 50 per cent must be either foam or carbon dioxide.

Unfortunately the dry powder used in many of these extinguishers breaks down foam very rapidly, although some manufacturers have developed powders which they claim are compatible with foam. If itl is intended to provide extinguishers on this fifty-fifty basis it is important to check on the compatibility of the two extinguishing agents. It would be permissible, of course, to provide carbon dioxide and dry powder on the same fifty-fifty basis.

For small yachts and motor cruisers, in both of which a fire may quickly demand the abandonment of the vessel, the best type of extinguisher is either the gas-pressure dry powder type of at least 4lb. capacity or the vaporising liquid type of at least 1qt. capacity. In either case a spare charge for the extinguisher should be carried.

Electrical fires

Carbon dioxide is generally accepted as the best extinguishing agent for electrical fires on board ship. It will penetrate into small spaces where other extinguishing agents cannot reach, and it is a non-conductor. The rules also permit the use of the vaporising liquid type of extinguisher containing carbon tetrachloride. This must be of the hand-pump type, and bear a notice indicating that the fumes from the extinguishing agent when used on a fire are toxic and must not be inhaled.

The three types of fire risk present in most ships—liquid fuel, fittings and furnishings, and electrical equipment — are also present in every aircraft. One big difference is that whereas in most cases of small fires on board ship the fire is accessible for fire-fighting, fires may occur in an aeroplane in places which are completely inaccessible when the aircraft is in flight. Much of the fire protection equipment in an aircraft must, therefore, be automatic in operation and capable in addition of being remotely controlled by the pilot.

Another basic difference is that the weight of fire-fighting equipment used in the air must be kept to a minimum. For this reason, vaporising liquids such as methyl bromide are used because of their high efficiency; about 3.5 per cent of methyl bromide in air is sufficient to inhibit combustion. Methyl bromide is, however, highly toxic, and can be used only for the protection of those parts of the aircraft where there would be no danger of passengers or crew inhaling the vapours.

Experiments have been carried out recently with other halogen compounds, and a mixture of trifluorobromomethane and difluorochlorobromomethane is being used in some modern aircraft. All these halogens are non-conductive of electricity and serve the dual purpose of dealing with fires involving inflammable liquids and electrical equipment.

Reuters index of United Kingdom commodity prices based on the price on September 18, 1931, at 100 was 416.1 yesterday against 416.4 on August 30 and 418.0 on August 24.

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.